Early Narrow gauge - Part 4 The Peh-Chuang (*Beichuan*) Coal Railway & the aborted Chuan-Han Railway

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Introduction

In this part we shall investigate the origin and early history of the early attempts to build railways in Sichuan Province. The first plan was for a narrow-gauge railway which eventually opened in the late 1920s in a coal mining concession district north-east of Chungking (重庆 *Chongqing*). Construction of the railway had been intended to start in 1907 when two 0-4-4 saddle-tank locomotives of 2ft (610 mm) track gauge were purchased from the Kerr Stuart & Company from their California Works at Stoke-on Trent in Britain and shipped to Chongqing via Shanghai.[1]

As events eventually turned out, the opening of a coal mine railway line in Sichuan was held up for more than 20 years as local Chinese politics , officialdom and ultimately the 1911-1912 revolution frustrated the original investors. Meanwhile in the vicinity of "Ichang" (宜昌 *Yichang*), a short 26 km stretch of the planned standard-gauge Chuan-Han Railway [2] beat the coal mine railway's opening and commenced operations in 1910....but this only lasted for a short period.

Background to the Sichuan Mining and Railway Concessions

In the closing years of the 19th Century the "Battle for Concessions" by foreign powers and their business interests was raging with demand after demand being imposed upon China. The nation was almost defenceless following their defeat by the Japanese in the 1895 Sino-Japanese War . Concessions for railways , mining rights and "treaties " allowing foreign occupation and control of various territories within China were forced upon the Chinese throne . Among these concessions granted was "agreement " for a foreign loan syndicate to build and operate the trunk railway line through the Yangtze valley into Sichuan province.

This railway and other trunk routes in China were to be financed by a syndicate of Western banks. The resulting Hu-Kuang [3] loan agreement took years to negotiate and settle as Britain, Germany and France squabbled with each other for domination of the financing of railway development within China. After several compromises a total loan of £5,500.000 with annual interest of 5.5% was agreed upon with the British group to build the Hankow (*Wuhan*) to Canton (*Guangzhou*) "Yuhan" line, the Germans to build the section of the Chuan-Han line between Wuhan & Yichang with the remainder of the line west of Yichang to be allotted to a joint Anglo-French group. It had taken until 1909 to get to this state of compromise but just as the powers believed that the Chinese government would ratify this agreement, American banks poked their nose in and demanded a share of the action. It was not until May 1910 that the now "four powers" had apparently agreed on the division and by this time the loan amount had increased to £6 million Pounds.

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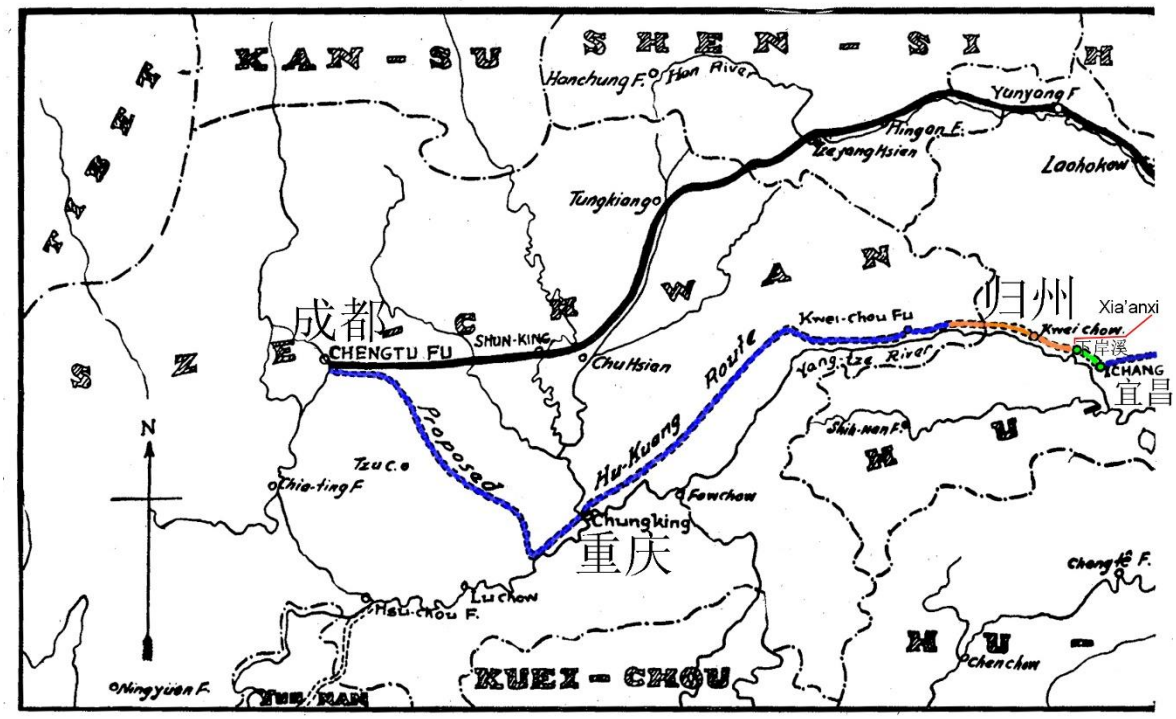
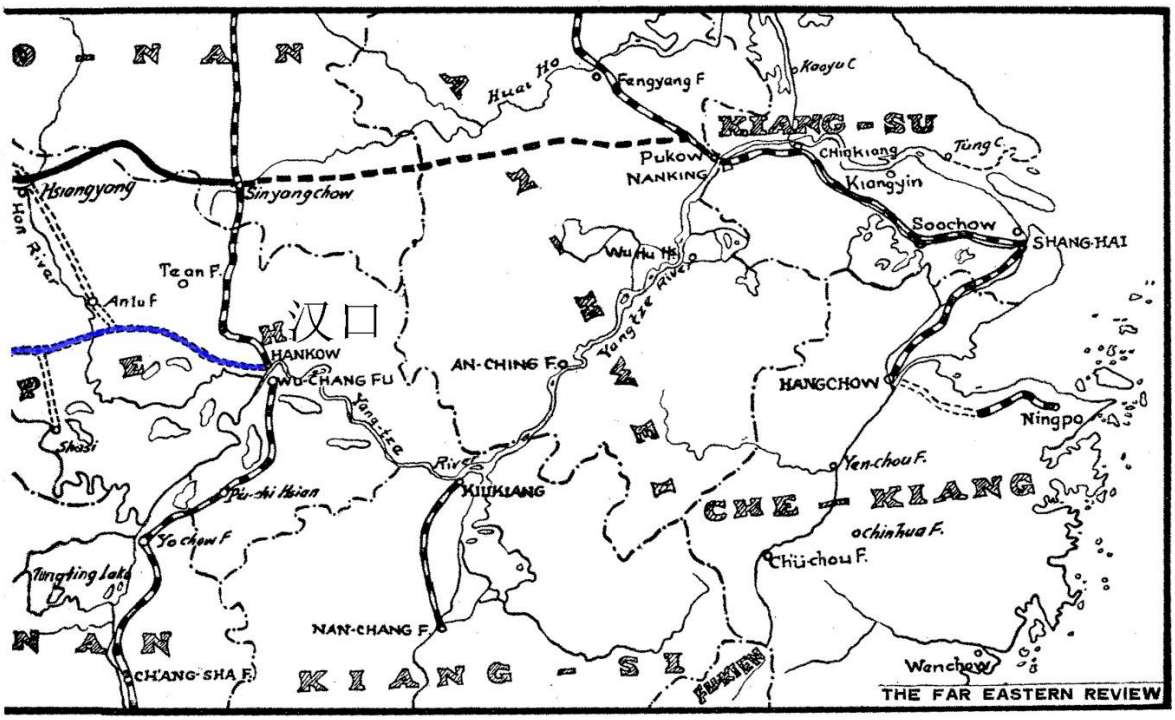
[1]The order for these locomotives was placed by J.H. Osborne who was a commission agent in Shanghai before assuming the role of the Company Secretary to the Shanghai Dock and Engineering Company. Shanghai was the main sea cargo transit point for the Yangtze River ports and the dock company would have had the requisite heavy lifting gear for the locomotives as well as steel rails and other railway equipment.

[2]The Chuan-Han Railway (川汉铁路) had been surveyed and projected to run west from "Hankow:" (汉口 *Hankou*) in Wuhan to Chengtu Fu (成都府 *Chengdu*) in Sze-Chwan (四川 *Sichuan*) Province following the course of the Yangtze River passing through Ichang (宜昌 *Yichang*), Kweichou (归州 *Guizhou*) and Chungking (重庆 *Chongqing*)

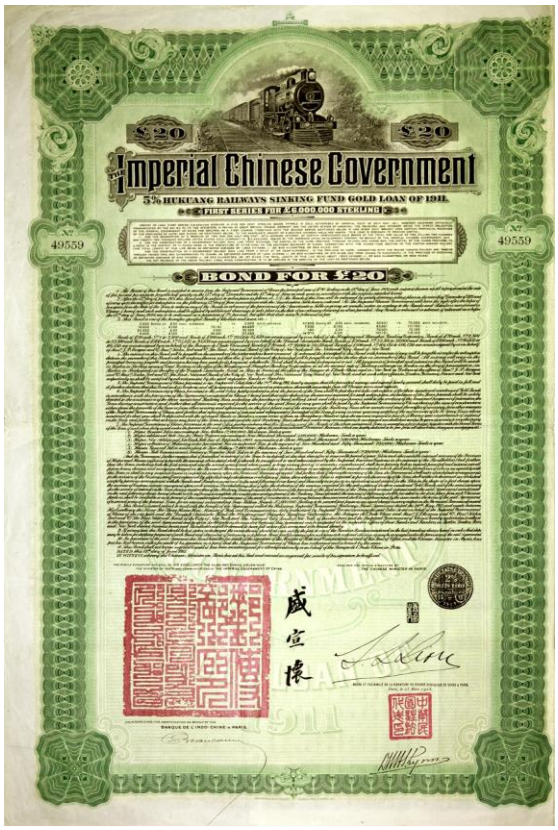
[3] The term "Hukuang" (湖广[廣]) *Huguang*) was the historic provincial name for the provinces of Hunan and Hupeh (湖南 & 湖北 *Hubei*) before they were divided.



(Above and below) Annotated map in two sections (west & east) showing (in blue) the proposed Hukuang Loan route of the Chuan-Han Railway between Hankou and Chengdu.[4] The green coloured section indicates where a short 26 km section of railway was actually completed and in operation between Yichang and Hsia Nan Chi (下岸溪 *Xia'anxi*), funded and built by a locally organized Chinese company in competition with the foreign syndicates' plan. The orange line indicates a further 95 km of preliminary track-bed earthworks. The heavy black line to north, was another more direct route to Shanghai proposed by the American Siems-Carey syndicate. The outbreak of the World War abruptly killed off this American proposal because of a withdrawal of financing.



[4] The unmodified map without annotations was originally published in the July 1918 edition of *The Far Eastern Review*



(From Left) : £20 and £100 examples of the first issue of the Hukuang Railways Loan Bonds sold by Banque de L'Indo-Chine (Paris) and Deutsch Asiatische. [5] (author's collection)

(Left) : Szechuan Hankow Railway 川漢鐵路鄂境股票. Share certificate No. 3443 for two shares of 10 Yuan for the 湖北(*Hubei*) section of the Sichuan Railway Company. Issued by the Hubei Provincial government treasury (湖北官錢總局) in 1907. (author's collection).

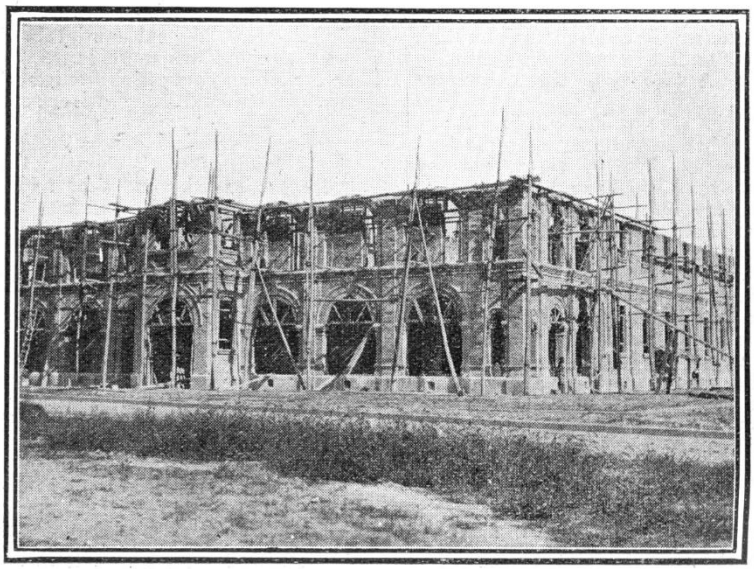
(Right) : Szechuan Hankow Railway share certificate for 5 shares issued by the Sichuan Provincial authorities. (photo downloaded from internet)

[5]The green bond bears the facsimile seals and signatures of the Minister of Posts & Communications, Sheng Hsuan-Huai (盛宣怀 *Sheng Xuanhuai*), the Chinese Minister in Paris, Liu Shih Hsun (劉式訓 *Liu Shixun*) and also the Chargé D'Affaires de Chine in Paris. The red bond bears Sheng's signature and seals and that of and the Chinese Minister in London, Liu Yulin (字葆林).

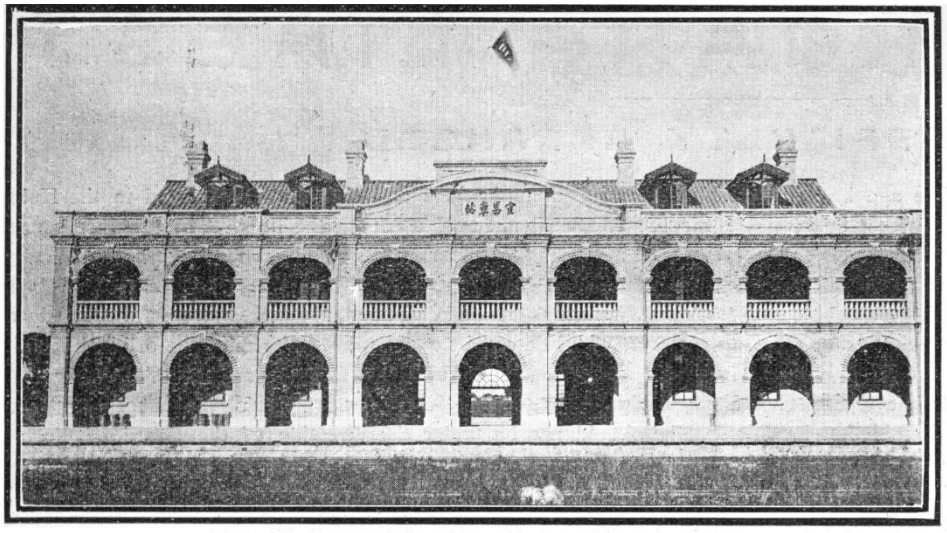
The Chuan Han Railway Company (川汉铁路)

This local Chinese railway endeavour had been organized in 1904 by the Viceroy (Governor-General) Hsi Lang (錫良 *Xiliang*) of Sichuan in order to try to prevent the foreign loan syndicates from being permitted to build the railway. The local gentry and officials were vehemently opposed to this local railway being built by foreign interests and believed that by commencing the construction of this line it would thwart the Chinese throne from sanctioning the foreign-built line. After Viceroy Xiliang was replaced by Zhao Erfeng (趙爾豐) in 1907 he too continued to oppose the foreign scheme and supported the local company. Shares were issued and sold both in Sichuan and bordering Hubei by the Provincial treasuries.

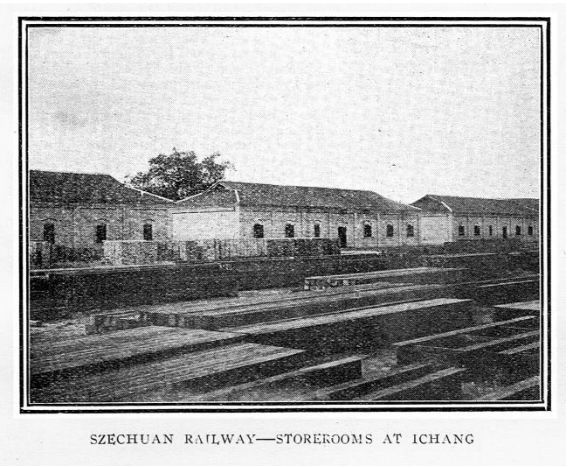
It was decided to commence building the line westwards from Yichang and in July 1910 the first spike was driven in at Yichang. Jeme Tienyao (詹天佑 *Zhan Tianyou*) was appointed Chief Engineer but since he was over-burdened with other national railway work he was unable to attend personally. The task was given to Dr. Yen Teching (顏德慶 *Yan Deqìng*) who was appointed Resident Assistant Chief Engineer. Within a few months about 25 km. of 85lb rail had been laid and put into operation.



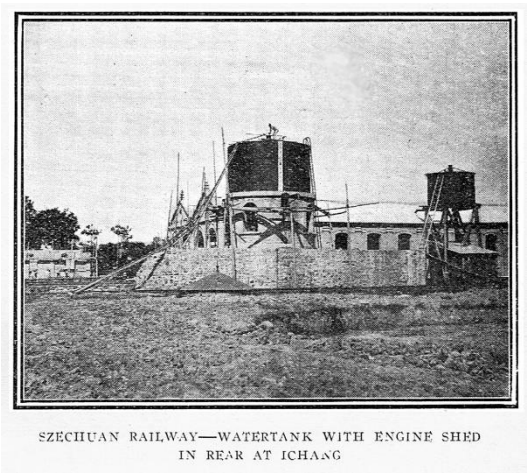
SZECHUAN RAILWAY—HEAD OFFICE AT ICHANG UNDER CONSTRUCTION



SZECHUAN RAILWAY—STATION AT ICHANG

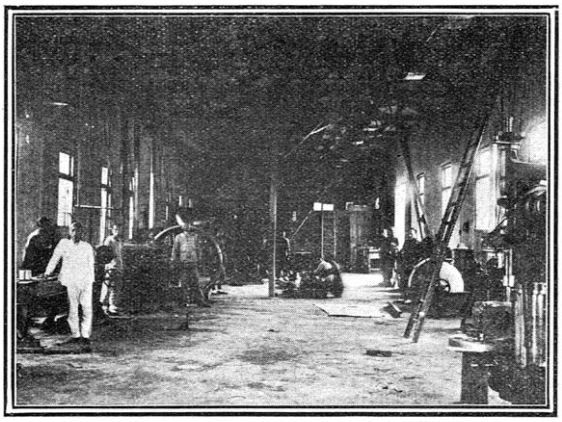


SZECHUAN RAILWAY—STOREROOMS AT ICHANG

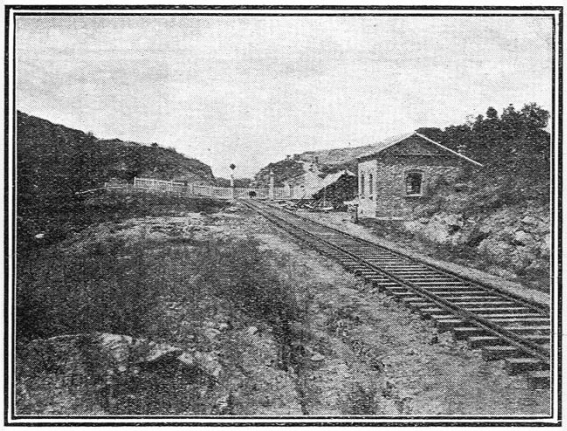


SZECHUAN RAILWAY—WATERTANK WITH ENGINE SHED IN REAR AT ICHANG

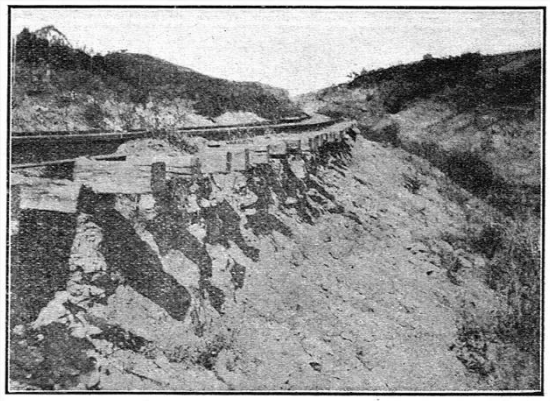
(Left) Railway Stores (Right) Water Tank & Locomotive Shed



SZECHUAN RAILWAY—TEMPORARY WORKSHOP AT ICHANG



SZECHUAN RAILWAY—VIEW ALONG THE LINE



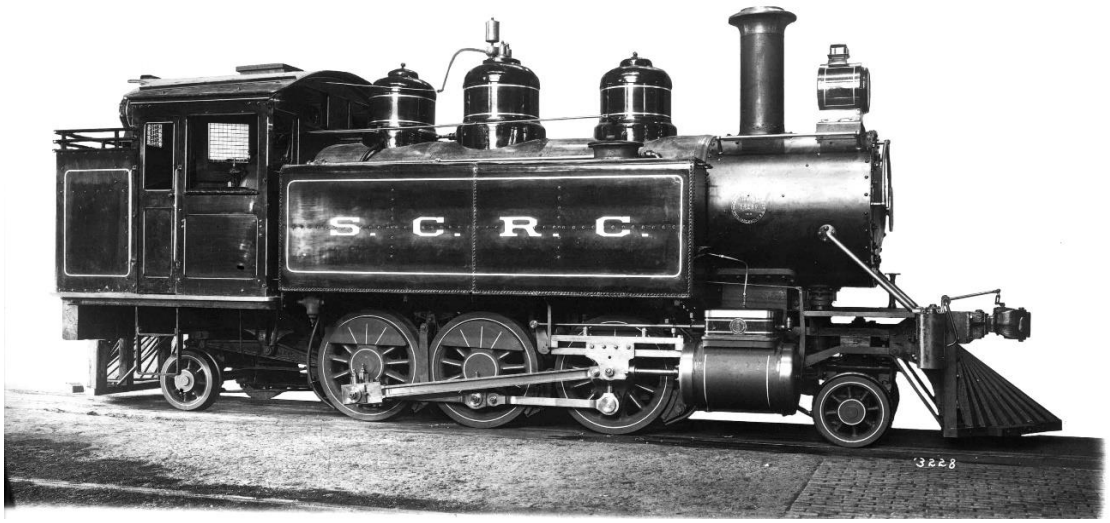
SZECHUAN RAILWAY—SHOWING HOW THE EMBANKMENTS HAVE GIVEN AWAY, AND THE CHARACTER OF THE SLEEPERS

(Left) : Level Crossing (Right) : Soil embankment eroded after heavy rain

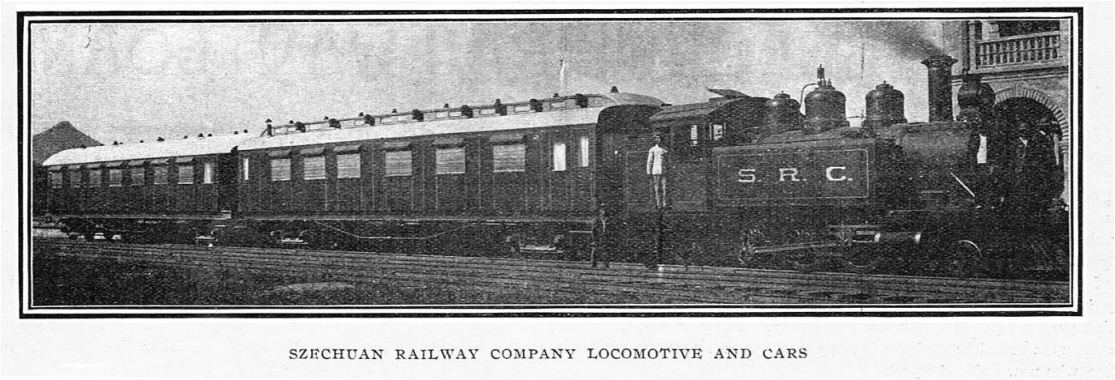
In 1911 immediately before revolution broke out across China it was reported that the railway had completed the Yichang station (shown above) as well as four stations along the line. There were two locomotive sheds which could hold 12 locomotives, a water tower, Machine Shops, Head Office & Administration block, Stores Department. Along the line numerous stone retaining walls and over 50 b bridges were completed with another 60 bridges under construction. The company has also acquired the following rolling stock: [6]

[6] January ,1912 edition of the Far Eastern Review (author's collection)

Three Baldwin shunting engines (USA) (Diameter of Driving wheels 1168mm)
One First Class carriage (purchased from the Locomotive & Carriage Works
of Imperial Railways of North China)
Two 2nd Class carriages "
Four 3rd Class carriages "
50 High-sided freight cars
30 Steel ballast cars (German)
20 Flat cars (German)

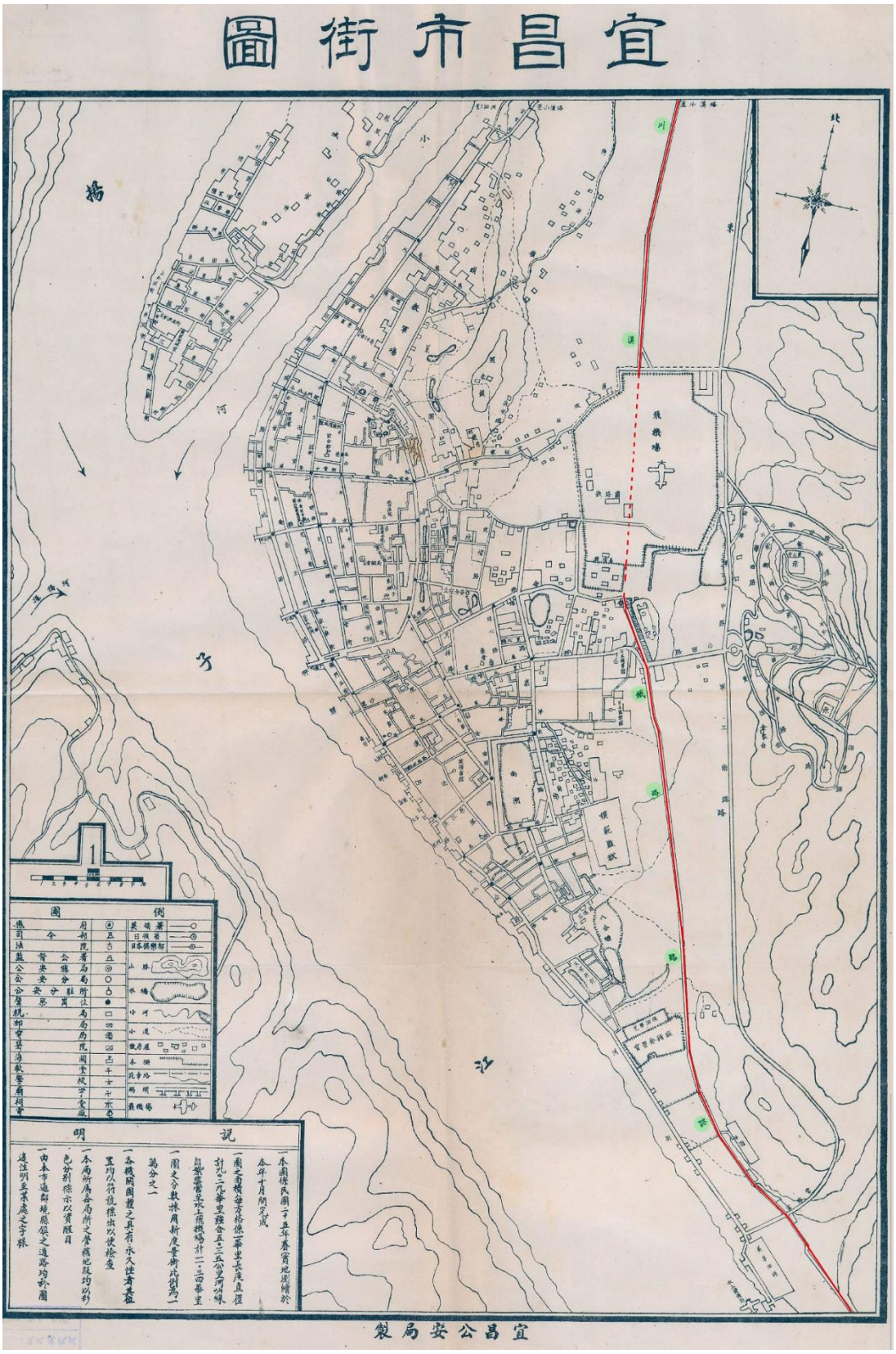


Buillder's photograph of a Baldwin 2-6-2 t locomotive bearing the letters "S.C.R.C" standing for Sichuan Railway Company [7]



Baldwin 2-6-2t locomotive heading two wooden carriages built by North China Railways Locomotive Works at Tangshan. On the right, the corner of the Yichang railway station building, which was located just outside the Yichang city Eastgate, may be seen . (Author's collection from *The Far Eastern Review*)

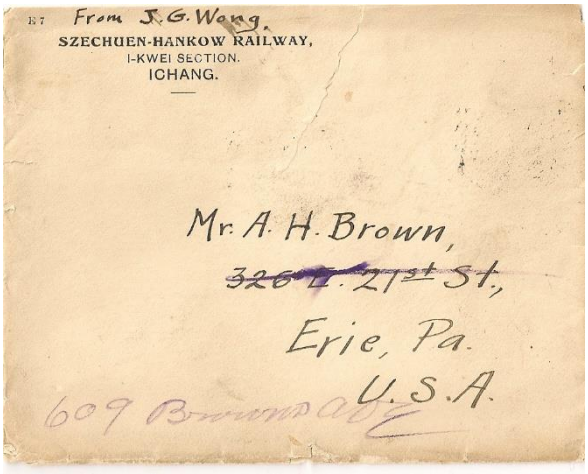
[7] The Baldwin Works numbers for the three locomotives supplied are stated in various records as 34304, 34305 and 36426.However, the builder's plate on this photograph appears to be 34289 which was allocated to an Erie Railroad 2-8-0. There was clearly a mix up when this photo was taken. (author's collection)



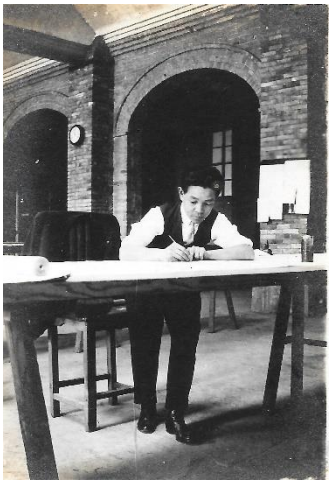
Map of Yichang city dated 1936 on which the former track bed of the Chuan-Han Railway is indicated (in red) with the description " 川 汉 鐵 路 路 迹 " (highlighted in green) . A road had replaced the railway but a section of the track bed had been levelled for an aerodrome.[8]

[8] Map source download from website : http://www.txlzp.com/tag/353:

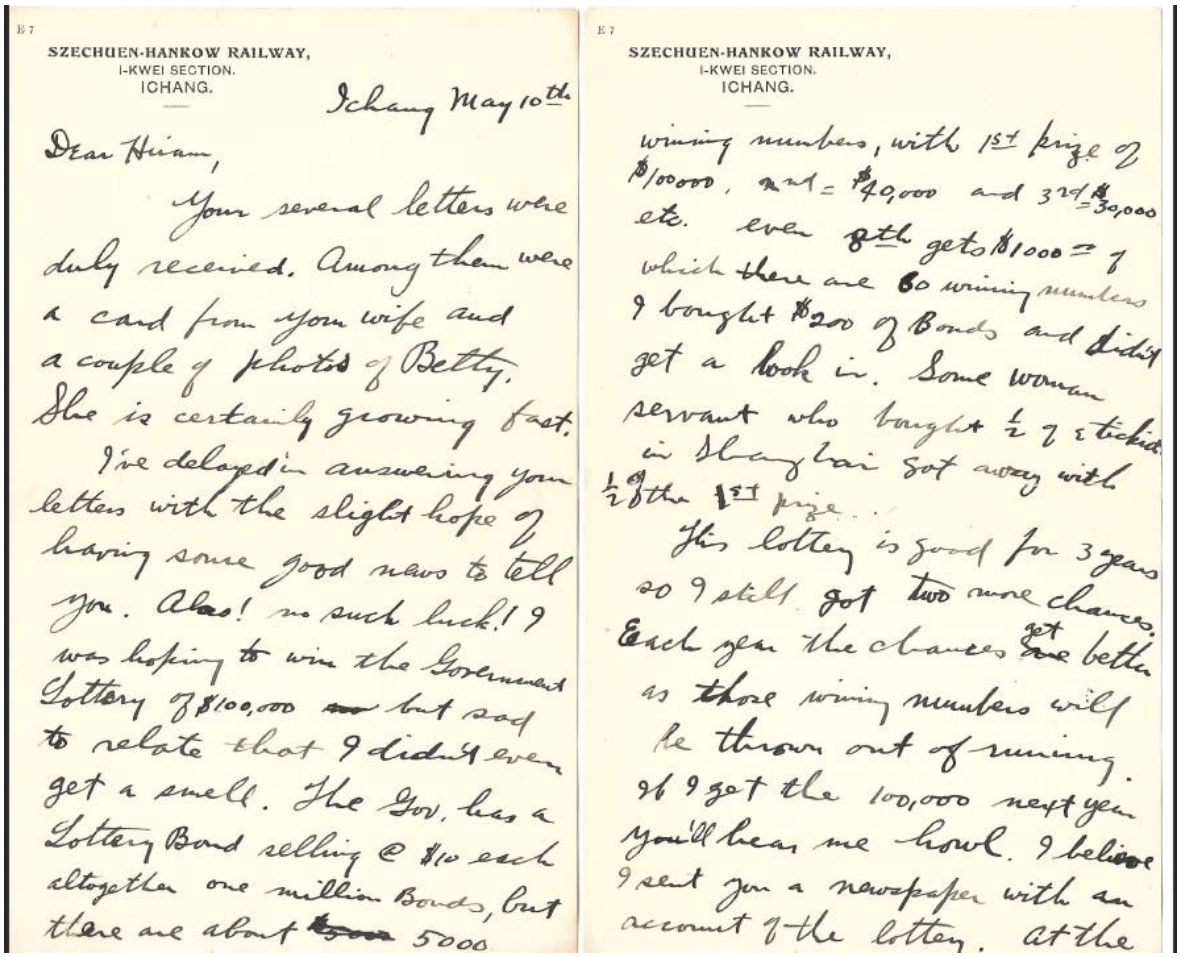
The earthworks construction work was performed very poorly and within a few months there were serious collapses of the embankments along the line after heavy rainfall. The engineering supervisory work was entrusted to inexperienced Chinese engineers who had trained in USA before returning to China. One such engineer was a young Cantonese man by the name of J. G. “Jik” Wong who in a letter written to his former classmate, Hiram Brown in USA described the misery of the railway’s lack of money and how he himself was so poorly paid.


E 7 From J.G.Wong.
SZECHUEN-HANKOW RAILWAY,
I-KWEI SECTION.
ICHANG.

Mr. A. H. Brown,
~~326 E. 27th St.~~,
Erie, Pa.
U.S.A.
609 Brown Ave



Above & below: Envelope containing letter from J.G. Wong (on right) to his former U.S. classmate. He writes that his only hope is to win the Government lottery. His meagre savings are being stretched to the limit trying to help his younger brothers get into a good school in Peking.


E 7
SZECHUEN-HANKOW RAILWAY,
I-KWEI SECTION.
ICHANG.

Ichang May 10th

Dear Hiram,

Your several letters were duly received. Among them were a card from your wife and a couple of photos of Betty. She is certainly growing fast.

I've delayed in answering your letters with the slight hope of having some good news to tell you. Alas! no such luck! I was hoping to win the Government Lottery of $100,000 ~~—~~ but sad to relate that I didn't even get a smell. The Gov. has a Lottery Bond selling @ $10 each altogether one million Bonds, but there are about ~~5000~~ 5000

E 7
SZECHUEN-HANKOW RAILWAY,
I-KWEI SECTION.
ICHANG.

winning numbers, with 1st prize of $100000, and = $40,000 and 3rd $ = 30,000 etc. even 8th gets $1000 = I which there are 60 winning numbers I bought $200 of Bonds and didn't get a look in. Some woman servant who bought ½ of a ticket in Shanghai got away with ½ of the 1st prize.

This lottery is good for 3 years so I still got two more chances. Each year the chances get better as those winning numbers will be thrown out of running. If I get the 100,000 next year you'll hear me howl. I believe I sent you a newspaper with an account of the lottery. At the

E 7

SZECHUEN-HANKOW RAILWAY,
I-KWEI SECTION.
ICHANG.

end of 3rd year if no prizes are won then ~~X~~ the money is refunded so only lose the interest which is rather small.

Am sending you a few photos the backs of which explain what & who they are.

My bank account is still rotten in fact from bad to worse. Recently a friend asks me to support him to go to U.S. to study Engineering and I couldn't refuse. So I get to give him $700 (gold) for three years. This fellow is already a Harvard grad. A.B. but an A.B. here is about starved to death unless he has a big pull and then squeeze

E 7

SZECHUEN-HANKOW RAILWAY,
I-KWEI SECTION.
ICHANG.

If I lose my job now I got to pawn things. What little I've saved is loaned out to relatives and tied up in Gov. Bonds. I am trying to sell about $2000 of Bonds paying 6%. God, if I didn't have my family to depend on me I could save money pretty fast. I got about $2500 loaned out and only $1500 left in Bank. If I lose my job, the $1500 will look sick in about 2 months.

Hope you are doing better. Have you got a raise yet? Keep me posted on the Intercollegiate west

P.S. I am trying to get my two brothers into the Gov. School at Peking which would insure their going abroad to study after graduation. In order to do my best in getting them in there I am trying to give a friend a present of a few hundred bucks. Such is life. There is nothing to be gotten for nothing. Every service must be paid. Don't mention this to anyone.

J Gee

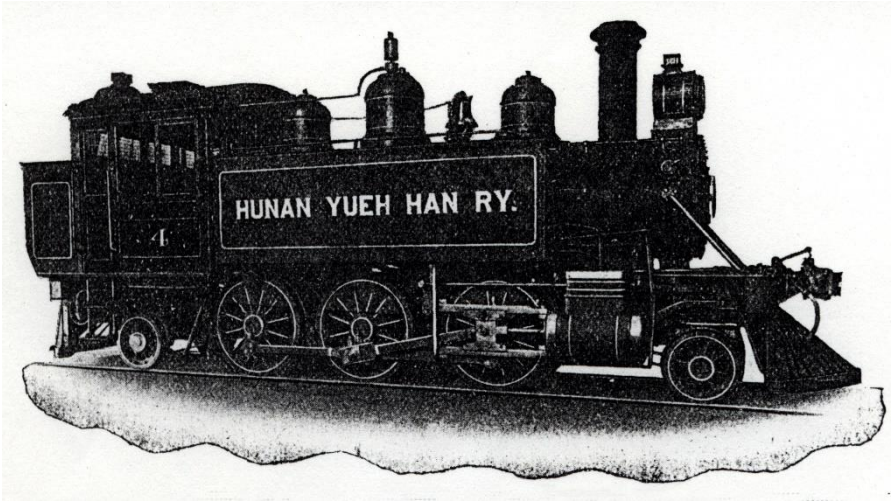
Group photo of Wong (2nd left) and his older colleagues at Yichang in May 1910 or 1911. (Copy of letter and photographs courtesy of Eric Politzer)

The short stretch of railway proved a disaster for its investors and ultimately also for the ruling Imperial Qing dynasty. Following initial signals from Peking that the British and French interests clamouring to build the line would not be given a concession for this railway, the local authorities encouraged and even coerced merchants and gentry in both provinces into buying shares in the local railway company. A number of route surveys were conducted by mainly inexperienced Chinese engineering students trained in Japan. The surveys were conducted from both ends and also for a middle section west of Yichang, It was at the latter location where some railway construction activity actually commenced. However, by the time of the outbreak of revolution in 1911 investors had only 26 km of poorly-built railway to "Hsia-An-Chi" (下岸溪 *Xia'anxi*) and about 100 km of additional preliminary earthworks east of Yichang to show for their money. Investors also later discovered that much of their money had been lost to corruption or squandered on building a hundred-foot high elaborate stone memorial at Chengdu commemorating the 'Martyrs of the Railway Protection Movement" who were killed in their 1911 protest while at Chongqing the city had a commodious 'Chungking Station Hotel' although absent a railway line.[9] Following a mid-1911 announcement by the Chinese Government that all private railways were to be nationalized and that foreign loans would be raised for their completion, Sichuan officials and natives spearheaded the "Railway Protection Movement" [10] joining in the nationwide rebellion overthrowing the Imperial Qing Dynasty.

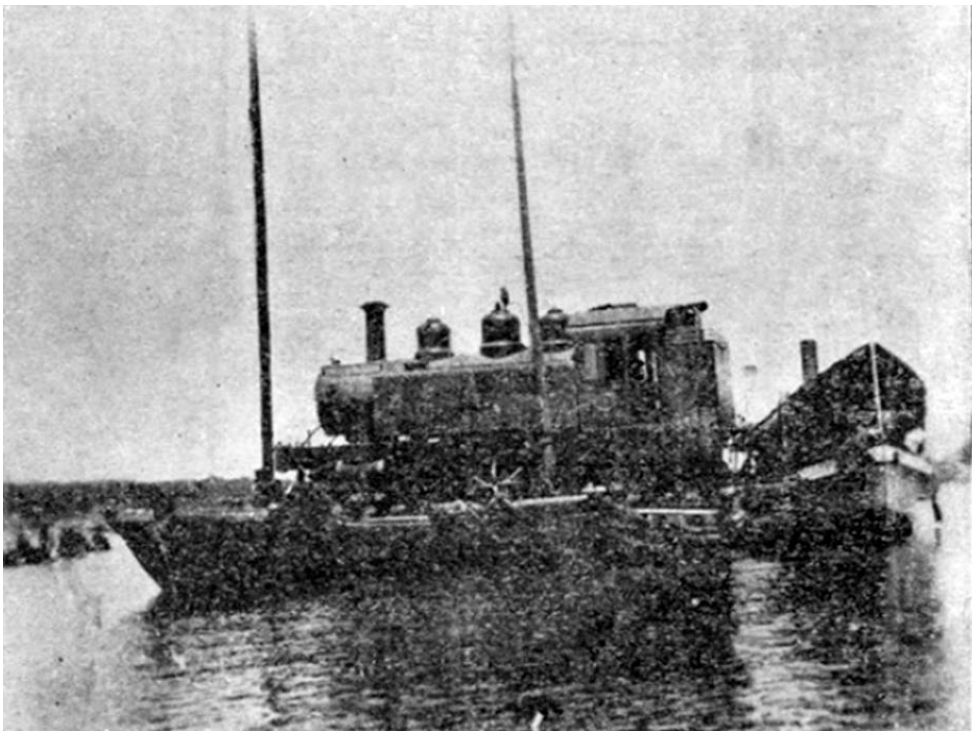
Following the collapse of the Imperial Government all work activities on this railway ground to a halt. The Szechuan Railway Company was in any case by then virtually bankrupt with two million dollars of investors' money had been spent on useless works or siphoned off into the pockets of corrupt officials. The new National Government attempted to take over the railway project and buy shareholders' assets but there was little of value left in the company. The short section of poorly built track east of Yichang had by then already deteriorated and was useless, the embankments having collapsed in several locations. The Hukuang Railways loan consortium, which involved Britain, France, Germany and USA made some efforts to revitalise the railway's construction plans in the period 1912-1915 but the outbreak of war in Europe killed off further progress because of lack of funds. The complications of resolving differences about replacing German interests in the consortium also muddied the waters. Following the end of the World War the project died a natural death and the railway along the Yangtze was never constructed. The rolling stock, having been acquired by the new Nationalist government was transferred to other railways under construction. The three Baldwin 2-6-2 tank locomotives were repainted and reappeared on the Hunan section of the Canton-Hankow (Yueh-han 粤漢) Railway, having been shipped down the Yangtze, at least part of the way in wooden river barges, probably to Changsha (长沙). From there the line had been built to Chuchow (株洲 *Zhuzhou*) as an extension of the Pinghsiang Railway (萍乡 *Píngxiang*) Railway in 1911. Following the revolution, the line was being pushed further south during 1913 from Zhuzhou to Lukou (渌口) as the new Nationalist government strived to fill in the missing sections of the uncompleted Yueh-Han Line.

[9] According to travel writer Graham Peck in his book "*Through China's Wall*" published in 1941

[10] In the run up to the 1911 revolution Beijing had announced that this railway and other failing provincial railway projects would be nationalized, and also that all further construction would be supervised and funded by an international consortium (the "Hukuang" Railways Loan agreement of 1911 (as described above). This caused an uproar in the Sichuan provincial capital, Chengdu. The arrest of the Speaker of the provincial legislature provoked angry crowds to march on the Viceroy's official residence. Guards opened fire and killed many protesters. This in turn enraged the nationalization opponents still more and in July a mob of thousands attacked the city, declaring independence . This preceded the later 10 October Wuhan uprising which then spread nationwide.



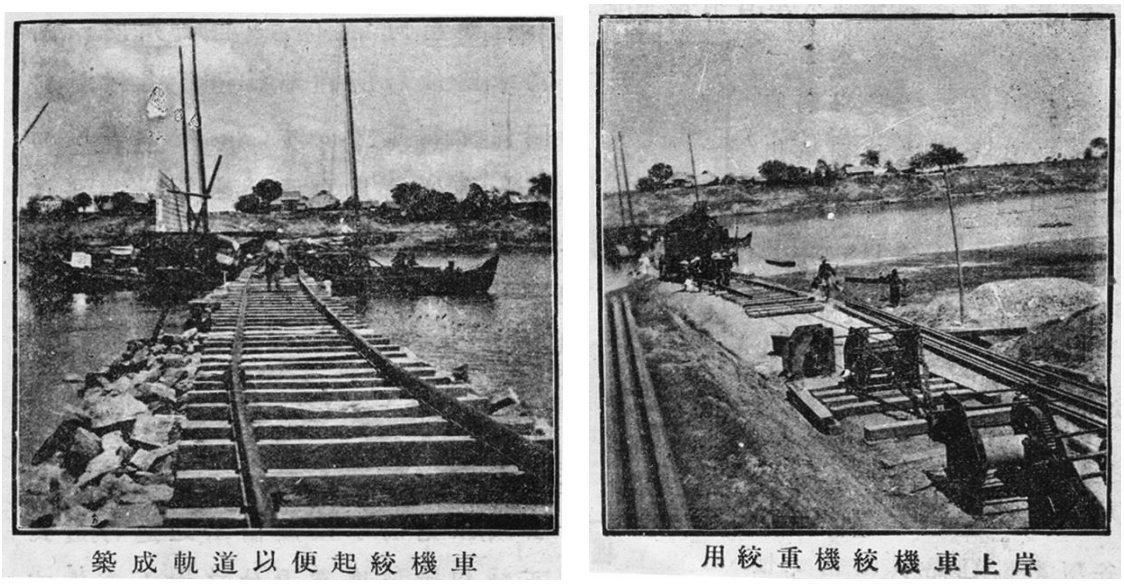
Baldwin 2-6-2 tank locomotive similar to the Chuan-Han locomotives except that the rear coal bunker is bevelled near the base on those supplied new to the Yuen-Han and other Chinese railways. This one is painted on the side tank with “HUNAN YUEH HAN RY.” and allocated with road number 4. [11]



An ex-Chuan-Han Railway Baldwin 2-6-2t. locomotive (with road number No.3) being transferred from Zhuzhou on wooden river barges towed along the Siang Kiang (湘江 *Xiangjiang*) by a steam launch to Leiyang (耒阳) for construction of the Zhuzhou-Shiuchow (韶州 *Shaoguan*) section of the Yue-Han Railway[12]

[11] Photo image extracted from a Baldwin Locomotive Works advertisement placed in an unidentified Chinese railway journal

[12] This photograph was taken in c.1935-1936 and appeared in the July 1936 Engineering Journal of the “Chuchjow-Shaokwan Section of the Canton-Hankow Railway Engineering Bureau” (粤汉铁路株韶段工程局工程记载汇刊). Although this was some twenty plus years after the first relocation of these Baldwin locomotives, the same technique of transport was employed. A section of rail was laid sideways across two large wooden river barges lashed together and towed by steam launch. The locomotive could be off-loaded by docking the barges next to a section of rail track laid on a temporary rock-based wharf from the river bank.



Unloading the Baldwin 2-6-2t from river barges at Leiyang in 1935[13]

The Narrow Gauge Bei-Chuan Coal Line in Sichuan

Returning to the main theme of this series of articles, the background to the origin of this line is long and complex. In 1896 Li Hongzhang (李鴻章) made his extensive tour of Europe in his bid to introduce modern industrial methods into China. During this visit to England one of the many investors and industrialists he was introduced to included William Pritchard-Morgan, (hereafter "Morgan") a Welsh lawyer who had also turned his hand to very successful gold and coal mining enterprises both in UK and Australia. Morgan had become very wealthy and was also a member of the British Parliament. Through his personal contacts, he was commended to Li Hong Chang as an expert mining adviser who could help China's modern development . Impressed by Morgan's credentials, Li entered into an agreement with him to petition the Throne of China to create and organize a Chinese Mining Bureau. After Li returned to China, Morgan was invited to China to pursue this plan. Eventually a formal agreement contract was drawn up by the Chinese government granting mineral exploitation rights to Morgan's company within Sichuan Province and ratified by the Throne in July 1899. Morgan meanwhile, invested his own money and set up The Eastern Pioneer Company, engaging three mining engineers from Australia including Dr. Robert Logan Jack[14]. With a capital of £300,000 other European capitalists were invited to participate and Leopold II, the King of Belgians became the second largest shareholder after Morgan.

In March,1900 Dr. Jack and his 3-man party of engineers travelled extensively around Sichuan surveying coal and mineral deposits and holding meetings with Provincial officials about the company's plans. Jack suggested to the Governor-General of Sichuan and the Mining Commissioner that a contract should be drawn for cooperation with the existing local Pao Fu Mining Company, However, in 1900 Jack's party were caught up in the "Boxer" anti-foreign mayhem and like all foreigners were advised to leave China hurriedly.

[13] Photo source Ibid footnote 10

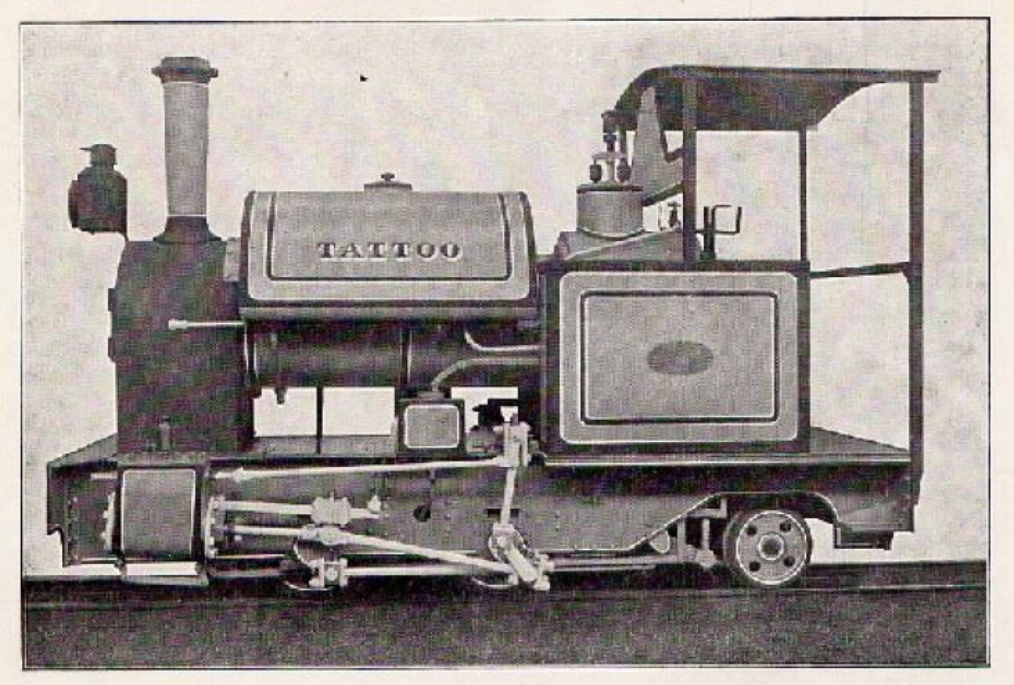
[14] R. Logan Jack was born and educated in Scotland , qualifying as a geologist at Edinburgh University. In 1876 he was appointed Government Geologist to Queensland in Australia where he served for twenty years before going to China. He was the author of several academic books on geology.

(Above) Group photograph of Dr R. L. Jack (seated centre) with Sichuan mining officials c. 1900. Next to Jack is believed to be Li Cheng Lung [15] who had been appointed Commissioner of Mines for Sichuan Province. Immediately behind Dr. Jack is his own son, Robert Lockart Jack and (rear left) John Fossbrook Morris both Bachelors of Engineering from Sydney University[16]

Later after the Boxer disruption had settled down the foreigners returned to Chongqing to continue their endeavours to advance the development of their acquired mining and railway "rights". Another name associated with the Pritchard and the Eastern Pioneer Company was Chongqing British resident Archibald Little (1838- 1907)[17]. Little had been the first man to get a small steam-powered vessel (the "Leechuan") up the Yangtze River to Chongqing in 1898.

The foreigners, however, found themselves forever beating their own heads against a wall. Every conceivable obstruction was placed in their way to get new modern mines opened, let alone their intended mine railway. Even though the Eastern Pioneer Company managed to buy some small local mines already in operation they could do nothing to modernize them or lay down a railway track. They were repeatedly obstructed by officialdom and not helped by the fact that the original Morgan concession contained a clause protecting local native mines already in operation. This impasse dragged on for years. Eventually the British government demanded compensation from the Chinese authorities for the money which had been invested in the venture. After lengthy negotiations a settlement was reached and the Imperial Chinese government redeemed the Morgan concession. The foreign investors departed from the scene, more than adequately compensated for their original monetary investment but perhaps not so for all the energy expended on their failed efforts. After the foreigners had sold out a number of Chinese investors then formed company called the Kiang Ho Coal Mining Company (江合煤矿公司) and for 70,000 Taels of silver bought the former concession rights from the Sichaun Provincial Government. This included the locomotives and railway equipment which still lay rusting in a warehouse.

[15] I have been unable to establish his Chinese name.
[16] Photo from R. L Jack's book :*The Back Blocks of China* published in 1904.
[17] Archibald Little (Chinese name :- "Liteh" 立德) was a merchant, traveller and writer. Born in London in 1838, he had arrived in China in 1859 and eventually settled in Chongqing where he established the Chunking Trading Company . He published several books including :- *Through the Yangtze Gorges* (1888), *Across Yunnan and Gleanings of Fifty Years in China* (published after his death). . He also wrote extensively about geography and geology of the Far East in various journals.



Builder's catalogue photo of the Kerr Stuart "Tattoo" class 0-4-2 (C-1) saddle tank locomotive[18]

Meanwhile the two small saddle tank locomotives named "Chungking" and " Chengtu" and other railway equipment had been shipped up the Yangtze to near Chongqing and landed at Shih Chi Ku (瓷器口 *Ciqikou*) where they had been placed in a warehouse. Later they were moved back down river below Chongqing to Kiang Peh (江北 *Jiangbei*).The Kerr Stuart Locomotive Works numbers of these engines were 1001 & 1002 built in 1907. The type of locomotive was a standard production model of the "Tattoo" class constructed to 2ft gauge (610 mm) although the company offered other narrow gauge options. This design was also acquired by other overseas industrial railway lines and one or two locomotives have survived although after countless rebuilds and modifications the features may no longer match the original design exactly.

The hulks of two Kerr Stuart Tattoo class locomotives "preserved" at the Namtu silver Mines railway in Myanmar . Note the distinctive oblique-shaped cab windshield openings.

[18] Photo from the Hunslet Locomotive Company's catalogue. The Hunslets Company of Leeds had acquired the Kerr Stuart Company in 1930

For the next 9 years this new Chinese company conducted coal mining operations in the Lung Wang Tong (龙王洞山 *Longwangdong Shan*) mountain district where high grade semi-bituminous coal had been mined since ancient times. However, the company was unable to improve on the old native mining methods and an army of coolies was needed to carry sacks of coal a distance of 20km down to the Kialing River (嘉陵江 *Jialing Jiang*) where the coal was manually loaded onto junks and shipped along the river for sale at various settlements. Later with the advent of steamer traffic the coal also found a good market because the coal was particularly suitable for steam boilers.

(Left) : Liu Cunhao 劉存厚

(Right) Liu Xiang 劉湘 [19]

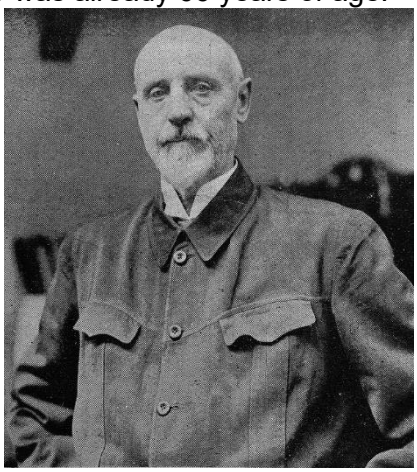
In 1919, however, the Kiang Ho Coal Mining Company's activities were brutally interrupted when local military leader General Liu Szt-ti (劉存厚 *Liu Cunhao* [a.k.a. 劉積之 *Liu Jizi*]) seized power and arrested all the company's managers on trumped up charges of tax irregularities. The army then took control of the mining operations. The company directors paid huge fines after which the managers were released from jail but the mines still rested under the control of the military. During this time the price of coal rose form $4 a ton to $12. Military control of Sichuan during this period was changing almost every year.[20] By 1926 the warlord in control was General Liu Hsiang (劉湘 *Liu Xiang*). This general had been in and out of power several times. In exchange for $30,000 worth of shares plus $40,000 cash, allegedly as a reimbursement for money invested, the army released control of the mines back to the company. Additional money was also paid out to people who had been contracted by the army to operate the mines.[21] Towards the end of 1926 the then reorganized coal mining company turned its attention to building a railway to eliminate the backward methods of using manual carriers to convey coal to the riverside, A veteran Chinese engineer, Tong Chin-chiang (唐建章 *Tang Jianzhang*) who had also invested in the company led this project and engaged a local Chinese engineer to survey the existing mines along the Western range already with small mines in operation. His rough survey map produced in only three weeks was however rejected. The project stalled again until late 1927 when a decision was taken to engage an experienced foreign engineer.

[19] Photos Wikipedia Commons

[20] China in the 1920s had entered a warlord era which lasted over a decade. Sichuan Province was a hotspot for chaos and disorder with several army generals in competition with each other jostling for regional power. The province was virtually lawless with the Beijing government unable to exercise any control over the regional military authority whose leaders changed almost yearly. The soldiers of the various Sichuan regiments behave like gangs of bandits robbing whole communities and raping their women. In 1921 the entire city of Yichang was attacked, looted and many buildings torched, including the foreign trading houses.(see "*The Great River – The story of a voyage on the Yangtze Kiang* by G.M. Fitkin. Published in Shanghai, 1922)

[21] *The Far Eastern Review* September 1931 and "Warlords of the Republic of China" (民國軍閥) - Wikipedia (https://zh.wikipedia.org/zh-hk/%E6%B0%91%E5%9B%BD%E5%86%9B%E9%98%80)

A recruiting exercise in Shanghai resulted in the engagement of veteran Danish engineer Jesper Schultz (“守爾慈”) who was already 66 years of age.[22]



Jesper Shultz, 66-year old Danish Engineer[23]

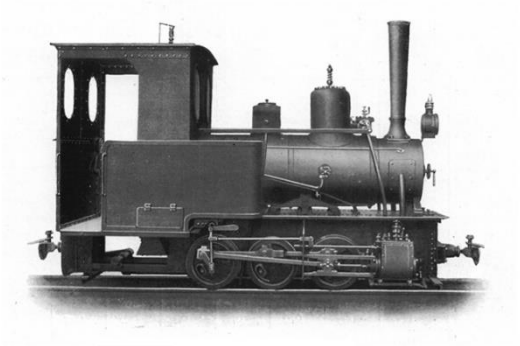
Shultz assisted by a young but very able Chinese engineer, Tong Shui-wu (唐瑞五 *Tang Ruiwu*)[24] conducted a detailed and painstaking survey which was completed in March 1928. The “Peh Chuang” Railway Company (北川铁路公司 *Beichuan Tielu Gongsi*) was formed in collaboration with the existing coalmines operating under the name of the Tianfu Coal Mining Company (天府煤矿公司). The company next purchased at a cost of $35,000 the two old Kerr Stuart locomotives and surviving railway equipment from the local government but had to spend $10,000 more on reconditioning it and buying replacement rails since many had been lost.[25]

Early track bed formation using manual methods. Shultz is identifiable by his distinctive white beard. 3rd from left, wearing a wide-brimmed flat cap is probably Tang Jianzhang.

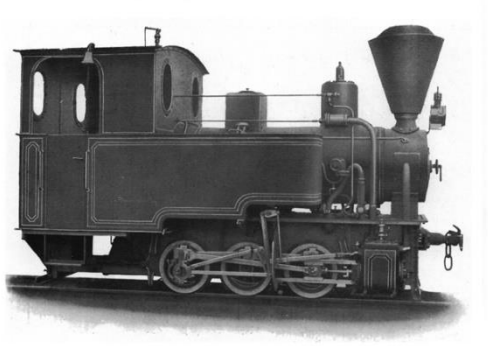
[22] I can find no record of J. Shultz listed in earlier China foreign residents lists so it is unclear what previous career background he came from. There is however a J. Schultz (note difference in spelling) listed as a railway engineer on the German controlled Shandong Railway (胶济铁路 Kiao-Tsi Rly.) in 1914. There is a possibility that this might be the same man, although it was rare for this company to employ non-Germans .
[23] Photo from *The Far Eastern Review*, September 1931 (Author’s collection)
[24] Tang Rui-wu was the nephew of Tang Jianzhang.
[25] In 1926 the railway equipment had been taken out of the warehouse at Ciqikou and been moved to Jiangbei for road building purposes where it had suffered much rough handling leaving it on a poor state.

Shultz (Centre) & associates in 1931 shortly after the Beichuan Railway started operations. Shultz's left arm is resting on the shoulder of a young Chinese man (wearing a peaked cap) who is believed to 唐建章 Tang Jianzhang.[26]

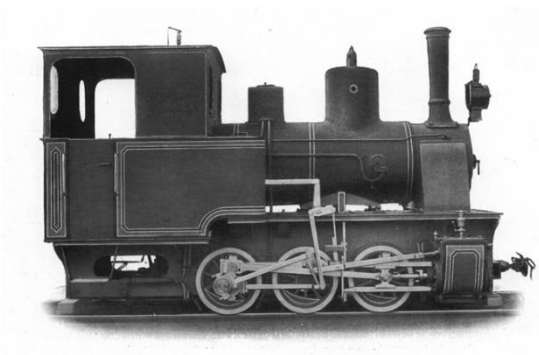
In addition to acquiring the 1907 railway equipment the company placed orders for new rolling stock from Germany and this included two new Orenstein & Koppel 0-6-0 (Ct) side tank locomotives. These were Works nos. 12192 rated as 110 H.P and 12193 rated as 70 H.P. both built in 1930. In 1933 one more 70 H.P O&K locomotive was purchased.



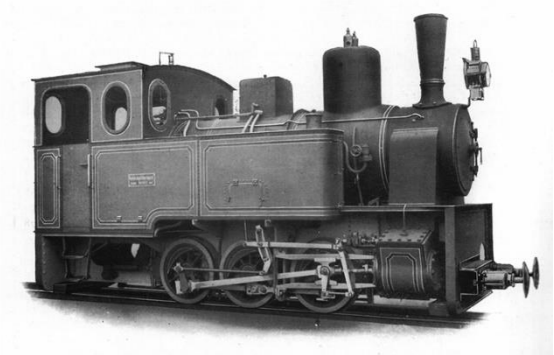
0-6-0, 20 hp, 600 mm
5.8 t, coal fired



0-6-0, 50 hp, 750 mm,
10.2 t, wood fired



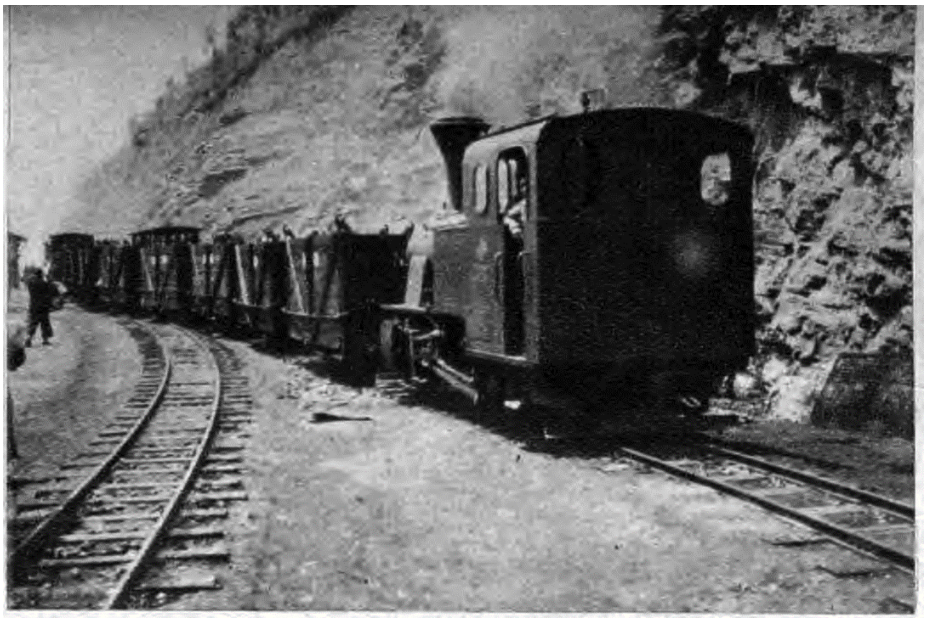
0-6-0, 70 hp, 900 mm,
13.2 t, coal fired



0-6-0, 140 hp, 1000 mm,
19.500 t, coal fired

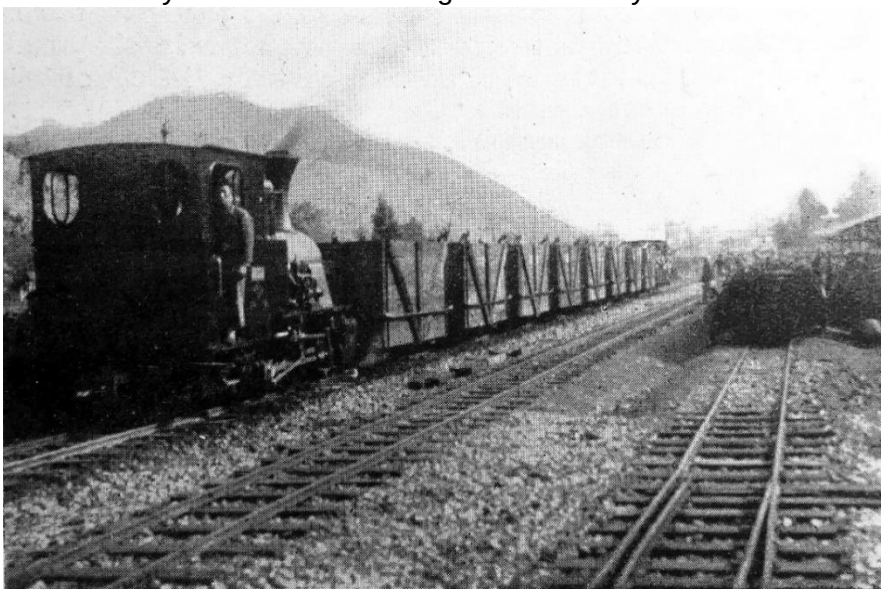
Extract from an Orenstein & Koppel locomotive catalogue c.1910 showing the different types of 0-6-0 narrow-gauge locomotives offered in various gauges to order. The locomotives were built as either wood or coal burning.

[26] This photo, also from *The F. E. Review*, was incorrectly captioned by the writer (Harold Isaacs) as showing one of the original 1907 era Kerr Stuart locomotives but this is the Orenstein & Koppel engine bought in 1930.



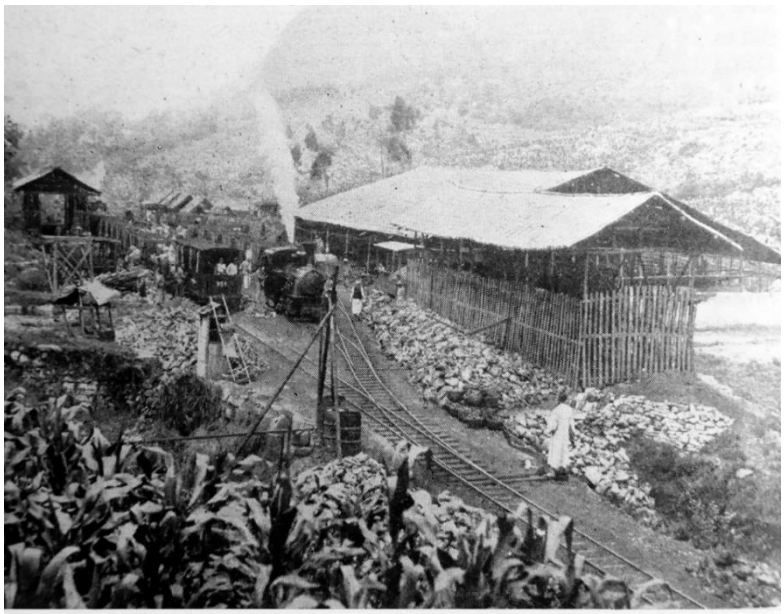
An Orenstein & Koppel 0-6-0 locomotive on the Beichuan Railway in c. 1937.[27]

Construction of the railway was divided into three sections. The centre Section 2 (8.5 km in length) was the first to be completed in October 1929, laid on a 2% grade bringing the southern end of the line up against a rocky hill towering 900 m. above the Jialing River, about 2.5km distance from the river port of Pai-Miao (白庙 *Baimiao*). To build this section all the equipment including locomotives were disassembled and carried from the river on the backs of hundreds of coolies and all the rocky track-bed had to be graded entire by hand. This work cost $170,000.



Another scene with an Orenstein & Koppel 0-6-0 locomotive on the Beichuan Railway

[27] Photo from "Shen Pao Monthly", Vol. 1937-4, issue 12, 1937 on the 10th Anniversary of the railway's construction. Note the cab has a longer cab and a forward side-window which the first 70HP 0-6-0 lacked, so this is probably the heavier 110 HP locomotive. .



At Wen-shin-tang, changing engines in the valley for the climb

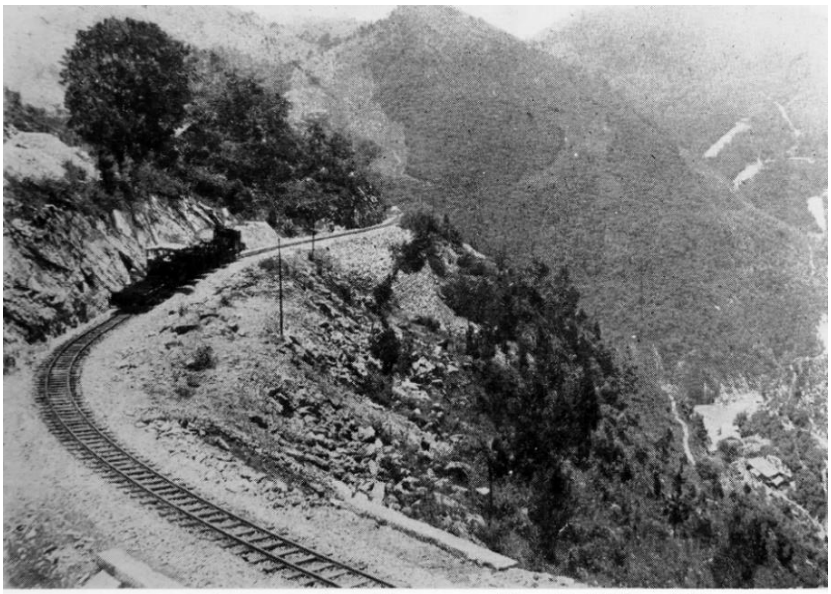
Section 2 in the valley near Wen Shin Chang (文星場 *Wenxingchang*). An O&K locomotive can be seen blowing off steam at the busy junction from where the line climbs steeply towards Baimiao.[28]

To build Section 1 to reach Baimiao, Shultz brought in tons of black gun-powder and blasted 30,000 cubic feet of tough limestone to form a road bed around the side of the hill near the summit on a 5% grade. This operation costing $60,000 took 8 months allowing this section to open in February 1931. The two sections now 11 km in total, however, ended abruptly some 300 meters above river level at Baimiao, The coal, therefore, initially still had to be hand-carried down to the junks for loading. This was nonetheless a great improvement because in place of employing about 10,000 coolies, each carrying only one load a day over a long distance, the company now needed about 1000 men who could make 15 trips a day from the rail head down to the junks.

Climbing around the hill to Bei-Miao

Track climbing steeply towards the coal discharge point above the Jialing river at Baimiao.

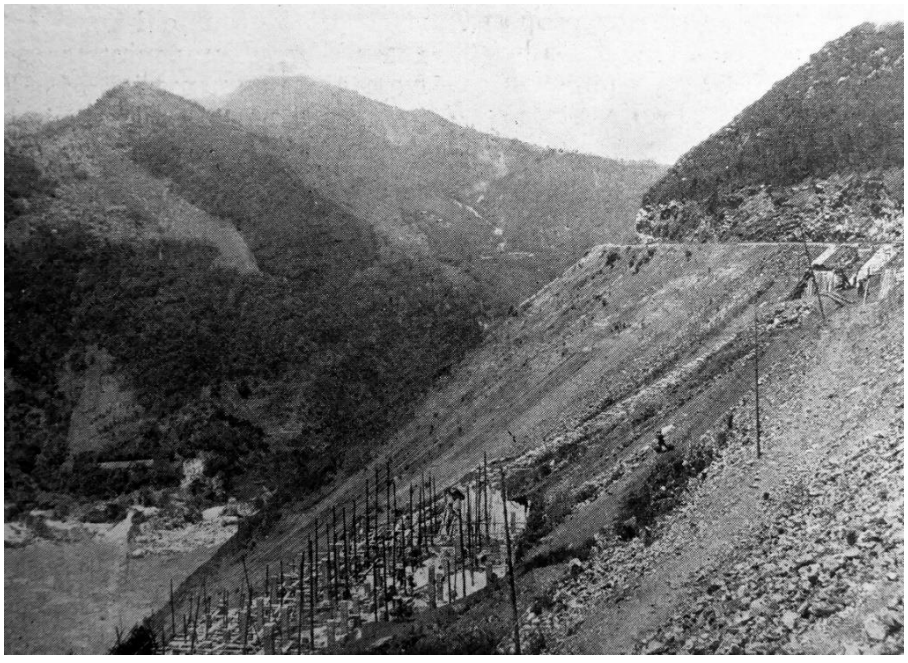
[28] Photos: *The F.E. Review*. By the 1940's Wenxing had grown into a sizable town and the name evolved to Wenxingzhen (文星塘). This junction was approximately the halfway point on the entire railway.



Some idea of the upgrade pull, approaching Bei-Miao, 900 meters above river level. Buildings below mark shipping point for coal [29]

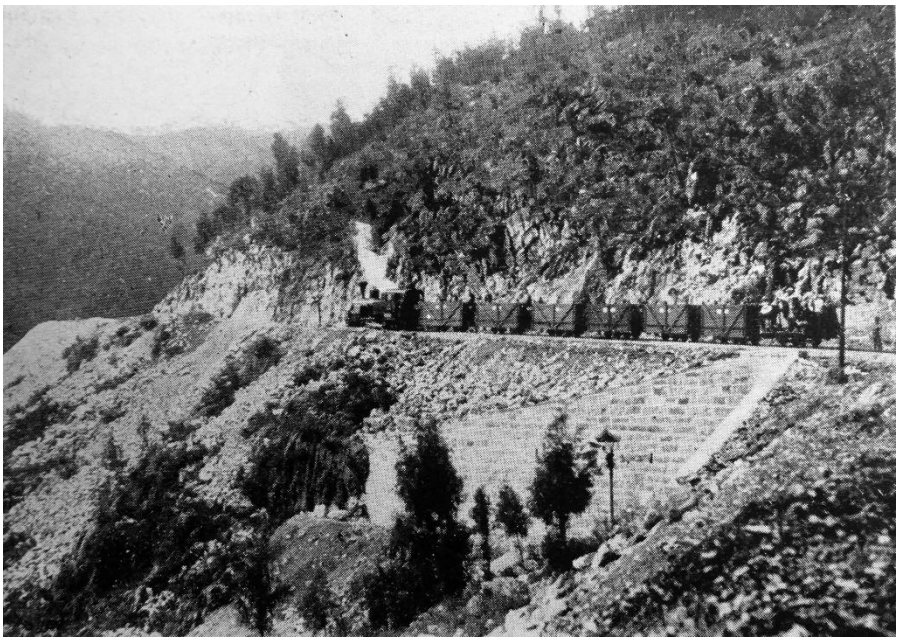
Close to Baimiao, the distant buildings in the lower right-hand corner are the coal shipping point near the river.

Shultz was still unsatisfied with this arrangement and next set about constructing a coal chute down the hillside above Baimiao, where coal could be collected at a staging point 150 m. above the river and from there hand-carried for about 300m. downhill for loading onto junks.



Coal chute under construction down the steep hillside above the Jialing River at Baimiao

[29] Photos from *The Far Eastern Review* Sep. 1931

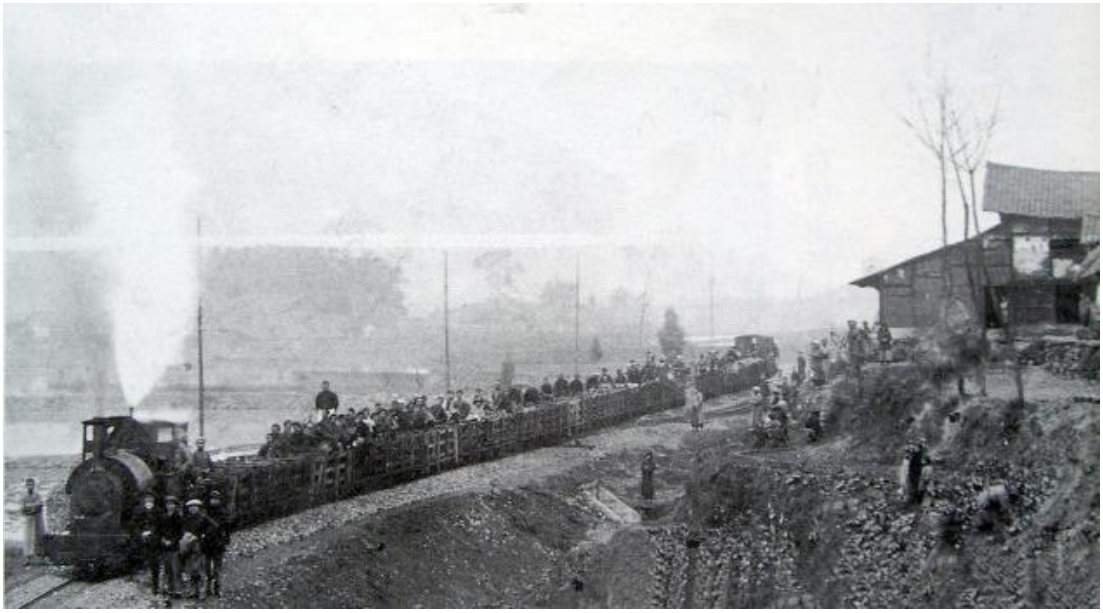


Coal train passing over a stone bridge, headed by the what appears to be the larger 110 HP Orenstein & Koppel locomotive imported in 1930.[30]

Photo of the larger 110 HP Orenstein & Koppel locomotive on the track around the steep hillside near Baimiao. The labourers in the background behind the engine appear to be shovelling coal or rocks down the hillside. The adjacent bamboo structure suggest that this might be the entrance to coal shoot down to the riverside.[31]

[30] The heavier and more powerful 110HP engine was need for the very steep incline around the hillside to reach Baimiao. On the lower and flatter sections of the line the less powerful 70HP Orenstein & Koppel and the Kerr Stuart engines proved sufficient (Photos from the *The F.E. Review* [author's collection]).
[31] Photo from an exhibit in the Beibei (北碚) District Museum

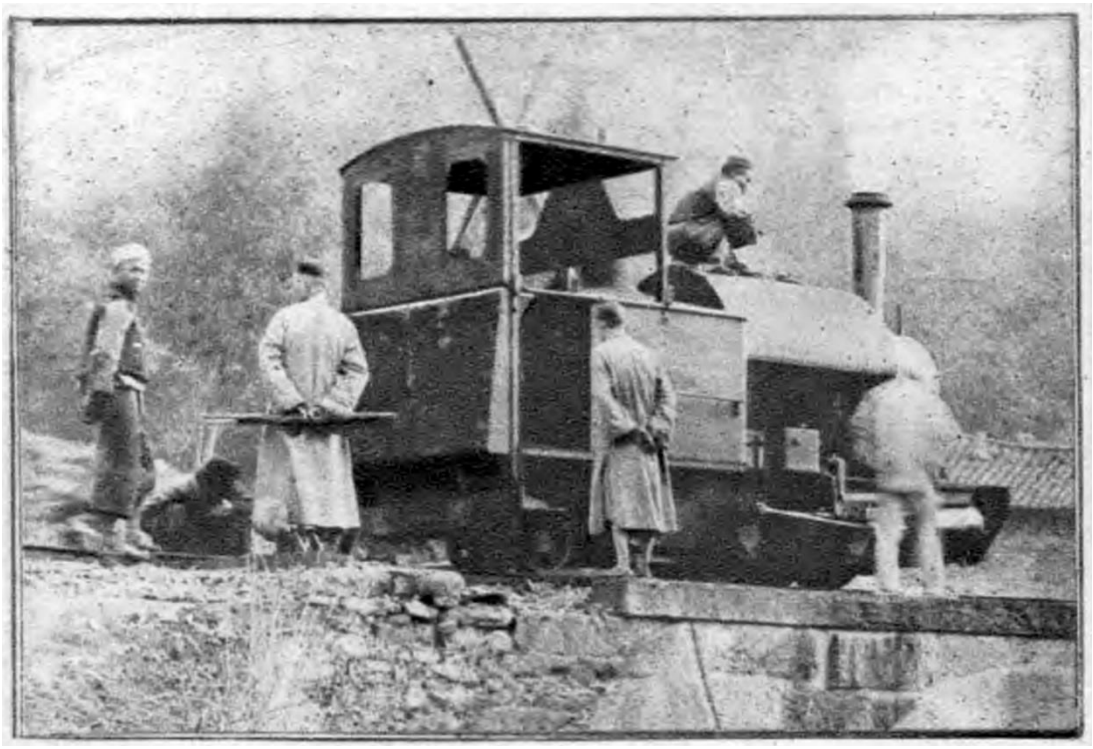
Wooden drop-bottom coal wagons being discharged into the coal chute erected above Baimiao.[32]



This scene appears to be on the flatter section of the line in the valley near to Wenxingchang. Vegetables and other crops can be observed being cultivated either side of the track, The crate-style sides of the wagons suggest the contents are probably fresh farm produce and perhaps livestock heading for market and that their owners are riding on the tops of the wagons . At the front of the train is one of the original 1907 Kerr Stuart 0-6-0 saddle tank locomotives.[33]

[32] Photo from *The Far East Review*

[33] *The Far Eastern Review* reported that following the completion of the railway a number of stations were soon built along the line and that crops grown in the valley and on hillside terraces, which included vegetables ,corn and bananas etc. soon found new ready markets along the route of the railway. Photo from an unknown source, kindly provided by Robbin Gibbons.

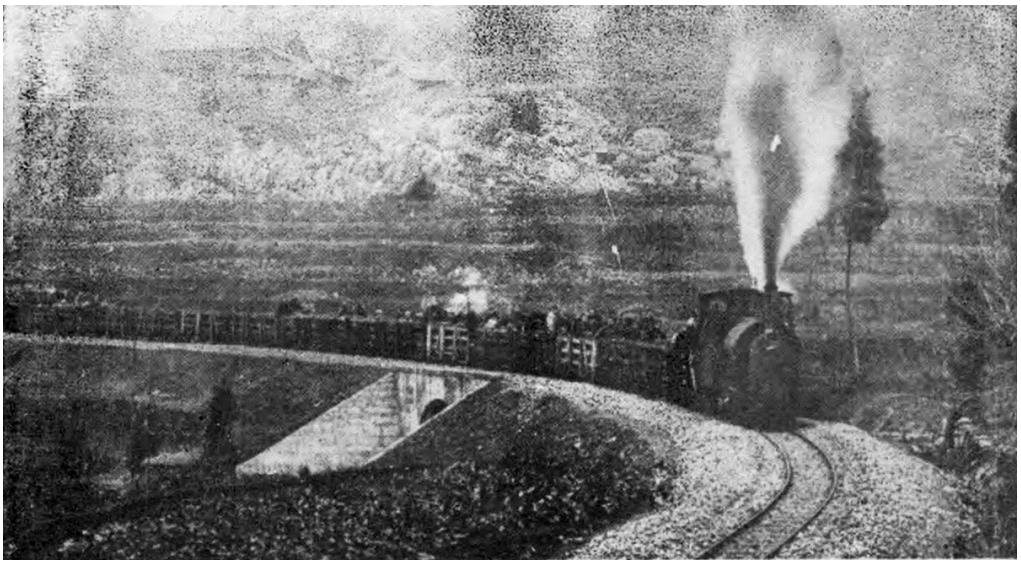


One of the 1907 Kerr Stuart 0-4-2 saddle tank locomotives stationary on a stone bridge. Note the rolled up red and green flags carried by a signal man. Shultz insisted on very strict Western style railway rules and control methods to ensure safety.[34]

Coal wagons being loaded from a coal bunker at the Fengchang (峰厂) mine . The train is headed by one of the smaller (70HP) Orenstein & Koppel locomotives (note the smaller side tank and that there is no side window in the cab.[35]

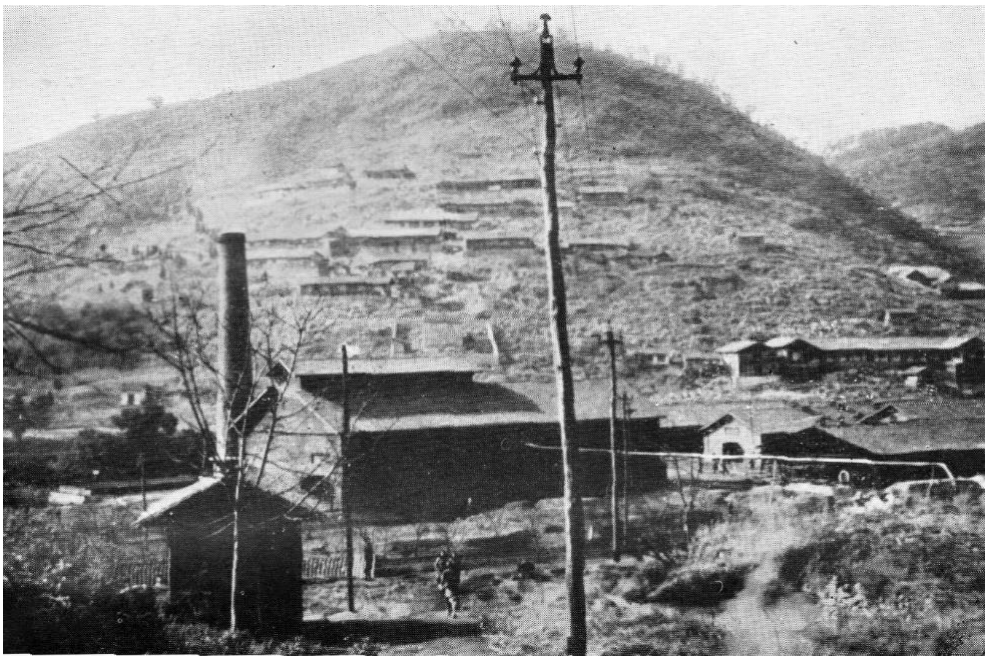
[34] Photo source: The China Pictorial, date unknown but c.1935

[35] The Fengchang mine was located a little north of Houfengyan (后峰岩) Photo downloaded from the internet - source visible).



Another view of the Kerr-Stuart 0-4-2 headed agricultural produce train on its way to market at Baimiao .It is just passing over stone bridge seen in other photos above. [36]

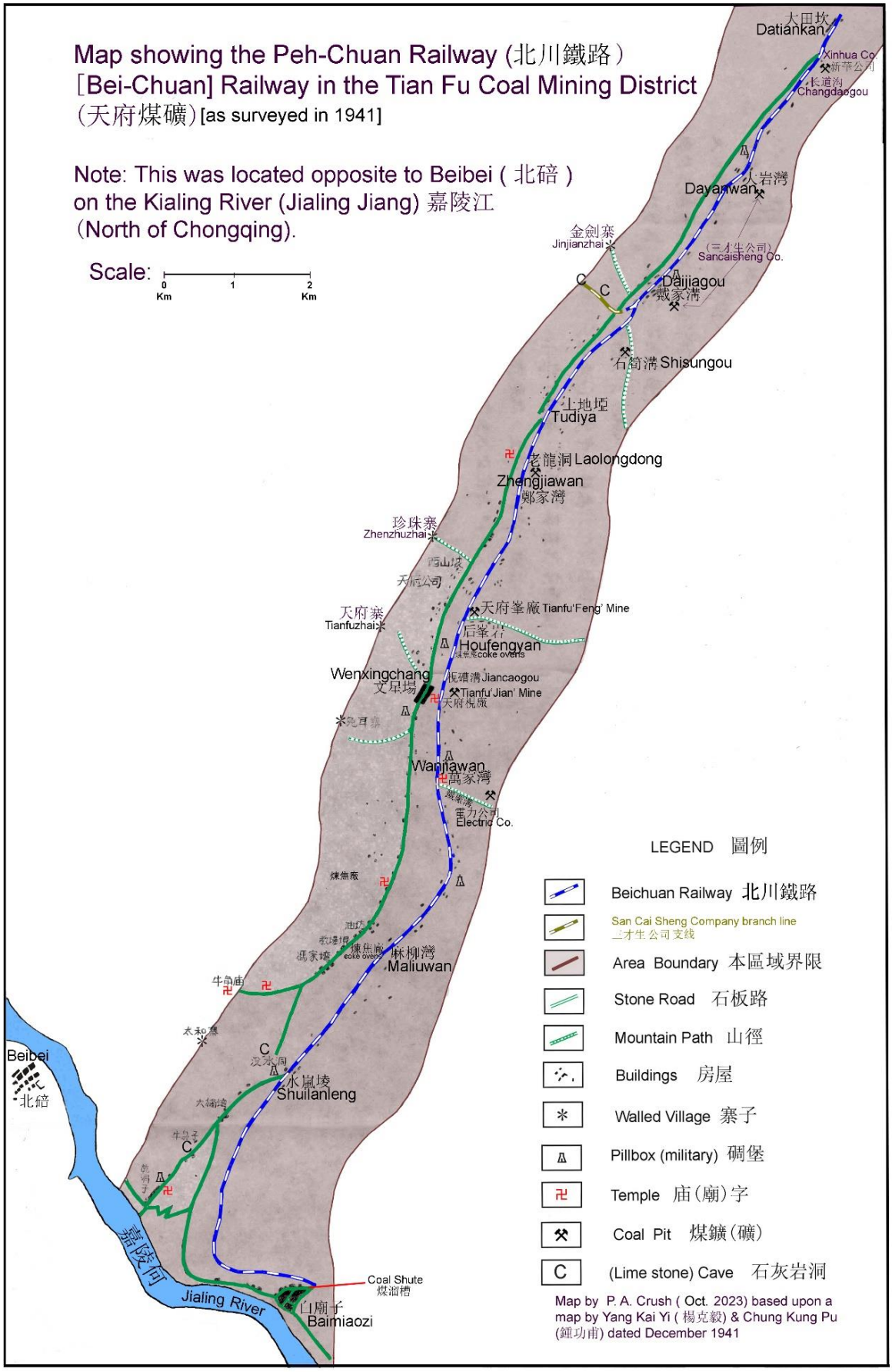
After completing Section2 of the line, Schultz and Tang Jianzhang next extended the line a further 4 km. to its new terminus at Tai Chia Gou (戴家沟 Daijiagou), completing this (Section3) in the autumn of 1931. Following this Shultz then set about conducting a new survey for a further north-east extension which would serve additional coal mines. In 1931 the railway was serving six mines along its route.



The Tianfu mines. c 1942[37]

[36] Photo from *The China Pictorial*

[37] British Naval Intelligence photo from *Geographical Handbook Series- Vol. III - China Proper*, 1945.


Map showing the Peh-Chuan Railway (北川鐵路)
[Bei-Chuan] Railway in the Tian Fu Coal Mining District
(天府煤礦) [as surveyed in 1941]
Note: This was located opposite to Beibei (北碚)
on the Kialing River (Jialing Jiang) 嘉陵江
(North of Chongqing).
Scale: 0 1 2 Km
大田坎 Datiankan
Xinhua Co. 新華公司
長道沟 Changdaogou
大岩灣 Dayanwan
金劍寨 Jinjianzhai
(三才生公司) Sancaisheng Co.
戴家溝 Daijiagou
石筍溝 Shisungou
土地垭 Tudiya
老龍洞 Laolongdong
鄭家灣 Zhengjiawan
珍珠寨 Zhenzhuzhai
天府公司
天府寨 Tianfuzhai
天府峯廠 Tianfu'Feng' Mine
后峯台
猴兒寨 coke ovens
Houfengyan
Wenxingchang 文星場
梶槽溝 Jiancaogou
天府悅廠 Tianfu'Jian' Mine
兔耳寨
萬家灣 Wanjiawan
電力公司 Electric Co.
煤焦廠
地坑
馮家垭
林柳灣 Maliuwan
牛角庙
太和寨
Beibei 北碚
水嵐垭 Shuilanleng
大堰溝
嘉陵河 Jialing River
Coal Shute 煤溜槽
白廟子 Baimiaozi
LEGEND 圖例
Beichuan Railway 北川鐵路
San Cai Sheng Company branch line 三才生公司支线
Area Boundary 本區域界限
Stone Road 石板路
Mountain Path 山徑
Buildings 房屋
Walled Village 寨子
Pillbox (military) 碉堡
Temple 庙(廟)字
Coal Pit 煤鑛(礦)
C (Lime stone) Cave 石灰岩洞
Map by P. A. Crush (Oct. 2023) based upon a map by Yang Kai Yi (楊克毅) & Chung Kung Pu (鍾功甫) dated December 1941

By April 1934 the line extended reached a new terminus at Tai Tien Kan (大田坎 *Daitiankan*), making the total length of the line 16.8 km.[38] Although Shultz had achieved a remarkable engineering feat by building from scratch a small railway line in such a remote and mountainous district, he was not directly involved in the coal mines' operations which remained under the control of the coal company's local managers .

Conditions for workers inside the unmechanized mines were atrocious and the coal was extracted manually. Two thirds of the employees were boys under the age of twelve and they had to work in dangerous and appalling conditions for only about $5 a month. There was little or no ventilation in the mines and no mechanization of anything except for the railway to transport the coal after loading into wagons. Water seeping into the lower levels of the mines was extracted by crude bamboo hand pumps and then carried in buckets to a sluice near the mine entrance.[39] The large volume of coal dust left over from the mining process was mixed with water on site and then placed in ovens to produce coke which was then used in iron ore smelting operations. During the 1940's the company built two plants specifically for the manufacture of coke, the first one near Maliuwan station in 1941 and a second much larger one with American assistance near Houfengyang in 1945.[40]

The Tian Fu Company never had an exclusive monopoly over coal mines located within the region near their railway. Numerous small mines had been in operations long before the company built their line and there was nothing to prevent other large companies from buying land with small mines and establishing consolidated operations. One such company was the Sancaisheng 三才生 company which by 1941 had at least two mines in operation at Tai Chia Kou (戴家沟 *Daijiagou*) and Dayanwan (大岩湾). This company also decided to build a mine railway but since relations between the competing companies were not harmonious, the Tianfu Company declined to allow Sancaisheng to form a through connection for their own trains. A small spur line which was intended to join the Beichuan line at Daijiagou was separated by a small bridge and labourers were required to manually transfer coal and goods across this bridge to load onto Sancuisheng's wagons. Initially the Sancuisheng's railway was almost a complete failure. They lacked sufficient railway equipment and had to beg around for used rails from wherever they could secure them. Also, unable to obtain steam locomotives they constructed two from converted lorries but these proved unsuccessful.

In spite of local political and commercial obstructions demand for coal increased rapidly during the Japanese invasion, and later the 2nd. World War. Increasing production of coal and mining of minerals for the war effort was encouraged by the Chinese government and eventually the proposed second railway line did get built. This was a parallel line to the original Beichuan line along the western side of the same mountain ridge down to the riverside port of Huangchieh (黄椗 *Huangjue*), directly opposite to Beibei. In order to service more newly opened mines, this line later also had a connecting junction with the Tianfu Railway's line just north of Wah Tien Tzu (瓦店子 *Wahdianzi*). The line then ran further north terminating at San Hui Pa (三滙坝 *Sanhuaiba*) by the late 1940's . [41]

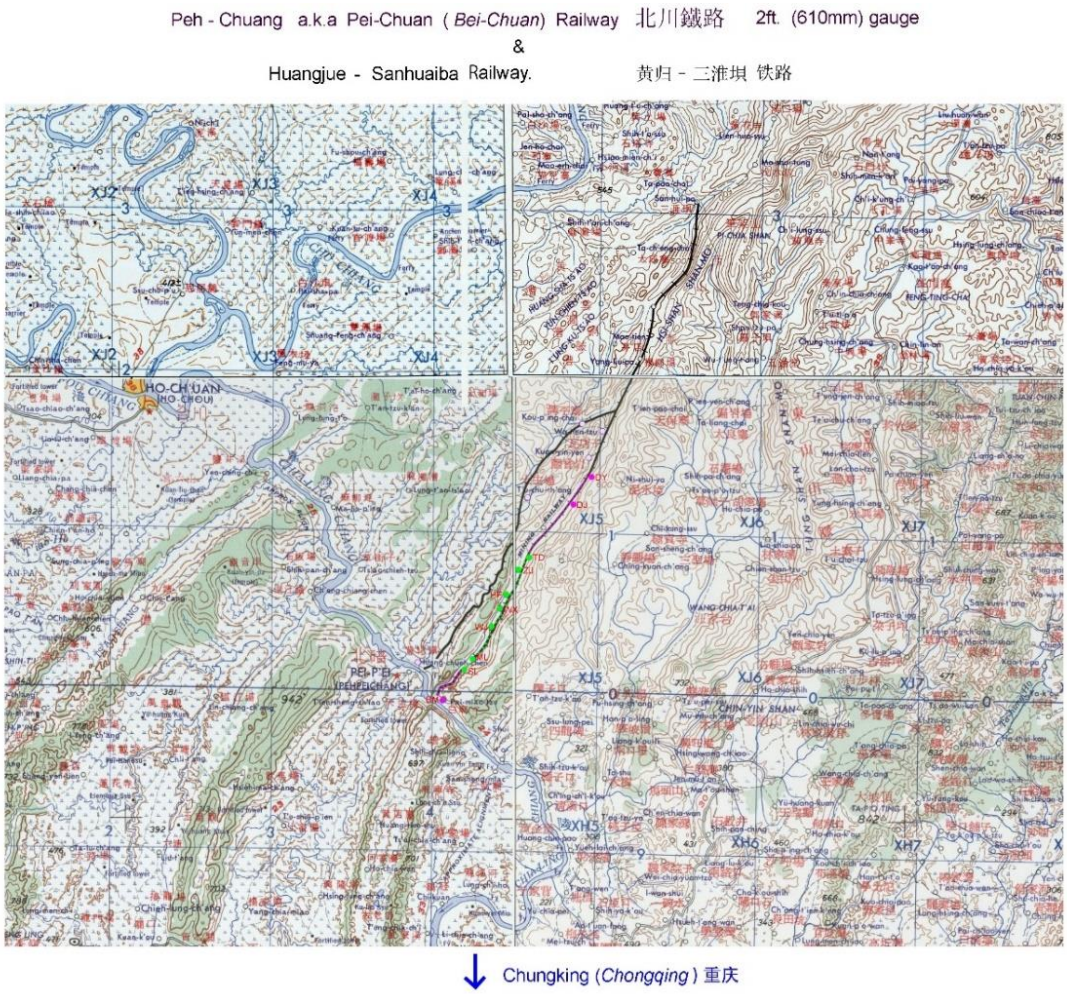
[38] 中国铁道建设史略 ("Outline History of Chinese Railway Construction"), published 1997.
[39] The *F. E. Review* writer, H. Isaacs describes the mine workers as "black human corpses in miniature with prematurely hardened bones and muscles doing animals' work"
[40] The coke ovens were located at Maliuwan (麻柳湾) and Houfengyan
[41] See U.S. Army Map

In 1943, the Beichuan Railway introduced three new 0-6-0 tank locomotives which were virtual copies of the Orenstein & Koppel locomotives. These engines, numbered 21 – 23 were reportedly built by the Beichuan Railway in their own workshops.[42] However, I personally harbour some serious doubts about whether the remote Beichuan workshops, situated within mountainous territory, had sufficient engineering facilities for boiler making as well as the casting and forging of large iron and steel components. It is far more likely they these engines, which seen to be Orenstein & Koppel copies. were acquired elsewhere, delivered in parts and then erected in the Beichuan workshops.

This photograph shows three new 'Orenstein & Koppel' type 0-6-0 tank locomotives carefully lined up for a staged photograph at the platform of Tienfu station (天府車站). Each locomotive is flying five small flags on the smoke box suggesting this a celebration for the completion of the new locomotives The photo caption " 天府煤鑛自製機車攝影 " proudly announces that these are self-built locomotives by the Tianfu coal mine. The first and second engine bear cab-side numbers 21 & 22 below a triangular builder's plate. The number on the third engine is probably 23, although this is not visible. The Tianfu station, decorated with a banner for the occasion, has been identified as lying north of Wenxing and was perhaps built on same the site as the original Houfengyan station.[43]

[42] M. Katsuragawa's ("*Steam Locomotives in China* ") *中国の蒸気機関車*) 2011 & *重庆煤炭工业的前世今*, downloaded from internet:
http://www.coalchina.org.cn/index.php?m=content&c=index&a=show&catid=10&id=109877

[43] Tianfu station was not listed as such in the original official list of stations when the railway was first completed during the 1930s. This photo is a digitally enhanced photo making use of three faded and damaged photographs from various sources . The photo is dated as being in April of the 33rd year of the Republic (1944)



Montage of U.S. Army Maps showing the original Beichuan coal mine railway & the later parallel line running south from Sanhuaiba to the Jialing River at Huangjue.[44]

Extract from an undated map published in Taipei, Taiwan c. 1965. No accreditation is given to the cartographer or the origin of the survey. The map still shows the two parallel lines laid within the Tianfu coal mining district. By the 1950's the mines became exhausted and discovery of new coal deposits in other districts of Sichuan which were more productive.

Records indicate that both lines were progressively demolished starting in the mid-1950's with final sections being uplifted in the mid-1960's. The track beds provided useful foundations for local vehicle roads which still exist to this day.

[44] Compiled from extracts from U.S. Army Maps Sheets NH-48-7, 48-8, 48-11 & 48/12 prepared in 1954.